

REMARKS

In reply to the Office Action of September 16, 2004, Applicant submits the following remarks. Claims 2, 29 and 30 have been amended. Claims 1-5, 7-12, 23, 25 and 26-31 are now pending after entry of this amendment. Applicant respectfully requests reconsideration in view of the foregoing amendments and these remarks.

Claim Objections

Claims 2, 26, 27, 29 and 30 were objected to because of informalities. Claims 2, 29 and 30 were amended according to the Examiner's suggestion, i.e., to refer to the device layer instead of the substrate.

Claims 26 and 27 have been relabeled as "previously presented".

Response to Examiner's Rejections

The applicant respectfully notes the history of prosecution of this application.

The Examiner previously rejected the claims in an office action mailed August 25, 2003. In the applicant's response, filed October 27, 2003, applicant noted that Bashir fails to teach the use of an isolation trench that electrically isolates the anchored elements of the microstructure from each other. Apparently, the Examiner accepted this argument, because following a request for continued examination to enter the amendment, a Notice of Allowability was mailed on March 18, 2004.

After receiving the Notice of Allowability, the applicant submitted a foreign search report along with a preliminary amendment. In the preliminary amendment, claim 1 was broadened by removing the limitation that the isolation trench electrically isolates a first region from a second region of the substrate. However, the claim still included the limitation that the isolation trench electrically isolates the anchored elements of the microstructure from each other.

The Examiner mailed the present office action on September 16, 2004. The applicant notes that the rejections in the present action are substantially the same as those presented in the action of August 25, 2003, prior to the Notice of Allowability, and are not based on any new

references or arguments. In particular, the Examiner does not address the applicant's prior argument that Bashir fails to teach the use of an isolation trench that electrically isolates the anchored elements of the microstructure from each other, or explain why the allowance has been withdrawn.

Section 103 Rejection

Claims 1-5, 7-12, 23, 25 and 28-31 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,474,353 (Bashir) in view of U.S. Patent No. 6,631,803 (Hunter). The applicant respectfully disagrees.

Claim 1 recites a method of fabricating a microelectromechanical system. A substrate is provided that has a device layer. A first trench is etched in the device layer. A dielectric isolation layer is deposited in the first trench to form an isolation trench. A second trench is etched in the device layer, the second trench defining a microstructure including a plurality of elements laterally anchored to the isolation trench such that the isolation trench provides electrical isolation for the anchored elements of the microstructure from each other.

Bashir discloses a micro-machined accelerometer using a silicon-on-insulator ("SOI") wafer structure. Although Bashir discloses an anchor trench 121 that can isolate a region in the wafer, Bashir's anchor trench 121 does not provide electrical isolation for the anchored elements of the microstructure from each other. For example, Bashir discloses electrodes 144 that are supported by sidewall oxide of the anchor trench 121 (Col. 7, lines 38-53). However, the electrodes 144 are not isolated electrically from each other by the sidewall oxide of the anchor trench 121.

Bashir discloses that the sidewall oxide can be removed from the anchor trench 121 so that the "subsequent filling of the trenches with polysilicon will cause the polysilicon to come into contact with the substrate 102 and silicon layer 106." That is, Bashir's device works without the sidewall oxide, i.e., a dielectric isolation.

As pointed out in reply to the previous rejection, the electric isolation cannot be achieved by structures defined by the masks shown in FIG. 10, either. For example, the masks for the electrodes 144 (and even for the hanging mass 142) are defined by the same unbroken polygon

with the same shading. Thus, these masks cannot be used to isolate electrically the electrodes 144 from each other.

Although Bashir does not explicitly disclose how the electrodes are isolated, it does disclose that photolithographic techniques are used to define buried layers, wells, and sinker regions in the SOI wafer 100. These regions are used for electrical connections of the common electrodes of the capacitors which form the sensing element(s) of the accelerometer. (Col. 4, lines 26-46.) Therefore, it appears that the electrodes 144 of Bashir are created by doping of portions of the silicon layer 106, and that the doped portions are isolated from each other by undoped portions of the silicon layer 106.

In sum, Bashir fails to disclose or suggest an isolation trench providing electrical isolation for the anchored elements of the microstructure from each other. Hunter is equally lacking. Hunter discloses only different structures for isolation trenches, as discussed in reply to the previous office action. For at least this reason, the applicant submits that no *prima facie* case of obviousness has been made with respect to claim 1. Claims 2-5, 7-12, 23, 25 and 28-31 depend directly or indirectly from claim 1 and are similarly not obvious.

Claims 26 and 27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Bashir in view of Hunter and further in view of Patent No. 5,637,189 (Peeters). The applicant respectfully disagrees.

Claims 26 and 27 depend from claim 1 and necessarily include the limitations of claim 1. Bashir, Hunter and Peeters all fail to suggest or disclose defining a microstructure including a plurality of elements laterally anchored to an isolation trench such that the isolation trench provides electrical isolation for the anchored elements of the microstructure from each other. For at least this reason, the applicant submits that no *prima facie* case of obviousness has been made with respect to claims 26 and 27.

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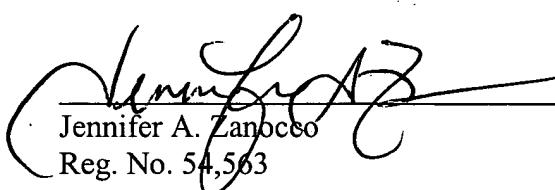
Attorney's Docket No.: 07043-060002 / B97-065-2

No fee is believed to be due. If, however, there are any charges or credits, please apply them to Deposit Account No. 06-1050.

Respectfully submitted,

Date:

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